



AMENDMENTS TO THE CLAIMS

This listing of the claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of manufacturing a piezoelectric thin film resonator comprising: that after forming a piezoelectric film on a substrate so as to cover a lower electrode formed on the substrate,

forms forming an electrode material layer for forming an upper electrode above the piezoelectric film,

forms forming a mask of a predetermined form on the electrode material layer, and then etches

etching the electrode material layer to form the upper electrode, wherein before a step of forming the electrode material layer, a protective layer for protecting the piezoelectric film during etching of the electrode material layer is formed so as to cover at least a part of an entire upper surface of the piezoelectric film where the upper electrode is not formed, and forming the electrode material layer is then formed so as to cover the protective layer, and

wherein the upper electrode is formed on the protective layer.

2. (Original) A method of manufacturing a piezoelectric thin film resonator according to Claim 1, wherein the protective layer is formed with silicon oxide (SiO_2).
3. (Original) A method of manufacturing a piezoelectric thin film resonator according to Claim 1, wherein the piezoelectric film is formed with zinc oxide (ZnO).
4. (Original) A method of manufacturing a piezoelectric thin film resonator according to Claim 1, wherein the electrode material layer is formed with aluminum (Al) or gold (Au).
5. (Original) A method of manufacturing a piezoelectric thin film resonator according to Claim 1, wherein the electrode material layer is etched by wet etching to form the upper electrode.
6. (Currently Amended) A manufacturing apparatus for a piezoelectric thin film resonator comprising: that after forming a piezoelectric film on a substrate so as to cover a lower electrode formed on the substrate,
forms forming an electrode material layer for forming an upper electrode above the piezoelectric film,
forms forming a mask of a predetermined form on the electrode material layer, and then etches

etching the electrode material layer to form the upper electrode,
wherein before the electrode material layer is formed, a protective layer for
protecting the piezoelectric film during etching of the electrode material layer is
formed so as to cover ~~at least a part of~~ an entire upper surface the piezoelectric
film, ~~where the upper electrode is not formed and forming~~ the electrode material
layer is then formed so as to cover the protective layer, and

wherein the upper electrode is formed on the protective layer.

7. (Original) A manufacturing apparatus for a piezoelectric thin film resonator
according to Claim 6, wherein the electrode material layer is etched by wet
etching to form the upper electrode.

8. (Currently Amended) A piezoelectric thin film resonator manufactured
according to a method of manufacturing a piezoelectric thin film resonator
according to Claim 1, by, after forming a piezoelectric film on a substrate so as to
cover a lower electrode formed on the substrate,

providing an electrode material layer for forming an upper electrode above
the piezoelectric film,

forming a mask of a predetermined form on the electrode material layer,
and

etching the electrode material layer to form the upper electrode,
wherein before providing the electrode material layer, a protective layer,
for protecting the piezoelectric film during etching of the electrode material layer,

is formed so as to cover an entire upper surface of the piezoelectric film, and then providing the electrode material layer so as to cover the protective layer; and
wherein the upper electrode is formed on the protective layer.

9. (Original) An electronic component constructed so as to include a piezoelectric thin film resonator according to Claim 8.

10. (Currently Amended) [[A]] The piezoelectric thin film resonator manufactured according to a method of manufacturing a piezoelectric thin film resonator according to Claim 2 claim 8,

wherein the protective layer comprises silicon oxide (SiO₂).

11. (Currently Amended) [[A]] The piezoelectric thin film resonator manufactured according to a method of manufacturing a piezoelectric thin film resonator according to Claim 3 claim 8, wherein the piezoelectric film comprises zinc oxide.

12. (Currently Amended) [[A]] The piezoelectric thin film resonator manufactured according to a method of manufacturing a piezoelectric thin film resonator according to Claim 4 claim 8, wherein the electrode material layer comprises aluminum (Al) or gold (Au).

13. (Currently Amended) **[[A]]** The piezoelectric thin film resonator manufactured according to a method of manufacturing a piezoelectric thin film resonator according to Claim 5 claim 8, wherein the electrode material layer is etched by wet etching to form the upper electrode.
14. (Previously Presented) An electronic component constructed so as to include a piezoelectric thin film resonator according to Claim 10.
15. (Previously Presented) An electronic component constructed so as to include a piezoelectric thin film resonator according to Claim 11.
16. (Previously Presented) An electronic component constructed so as to include a piezoelectric thin film resonator according to Claim 12.
17. (Previously Presented) An electronic component constructed so as to include a piezoelectric thin film resonator according to Claim 13.